

# **REVISED REMEDIAL ACTION PLAN**

**PSEG POWER CONNECTICUT, LLC  
BRIDGEPORT HARBOR STATION**

Prepared for:

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## 1. INTRODUCTION

This revised Remedial Action Plan (RAP) presents the approach developed for the remediation and post-remediation monitoring of environmental conditions at PSEG Power Connecticut LLC's (PSEG's) Bridgeport Harbor Station (BHS) located at 1 Atlantic Street in Bridgeport, Connecticut (Site). The Site location is shown on Figure 1.

PSEG acquired the BHS Site on 6 December 2002 from Wisvest-Connecticut, LLC (Wisvest). Wisvest had previously acquired the Site in April 1999 from The United Illuminating Company (UI). Because the Site qualified as an "Establishment," under Connecticut's Property Transfer Act (Connecticut General Statutes Section §22a-134 *et seq.*, as amended), transfer of ownership required submittal of a Form III to the Connecticut Department of Environmental Protection (CTDEP). The most recent Form III, submitted to the CTDEP in December 2002, identified PSEG as the "certifying party." On 9 January 2003, the CTDEP notified PSEG that it had determined that oversight of remedial activities at the Site in accordance with the CTDEP's Remediation Standard Regulations (RSRs) would continue to be delegated to a Licensed Environmental Professional (LEP).

Environmental investigations were initiated at BHS in 1998 by UI and continued by Wisvest following the transfer of the Site in 1999. These investigations focused on the 17 potential release areas (PRAs) identified as a result of the original Phase 1 Environmental Assessment. Figure 2 shows the current site plan and locations of the PRAs. The findings of the various investigations were submitted to the CTDEP in the following documents:

- *Phase I Environmental Assessment*, dated 16 November 2000 (Weston, 2000a)
- *Phase II/III Environmental Site Investigation*, dated 27 November 2000 (Weston, 2000b)
- *Comprehensive Site Investigation Report*, dated 6 April 2001 (Weston, 2001a)
- *Remedial Action Plan*, dated September 2001 (Weston, 2001b)
- *Environmental Condition Assessment Form (ECAF)*, dated 6 December 2002 (Weston, 2002)

In summary, PRAs 1, 2, 3, 5, 6, 8, 12, 13, 14, 15 and 88 were identified as potentially requiring some form of remediation. Based on the investigation results, it was concluded that no remediation was required at PRAs 4, 9, 10, 11 and 12. Former PRA 7 is no longer part of the Site since it was located on a parcel of land conveyed to the Bridgeport Port Authority. The Bridgeport Port Authority filed a separate Form III in connection with the transfer of PRA 7. PRA 16 is completely incorporated in PRAs 13 and 15 and is not assessed or addressed independently.

Wisvest initiated remediation at the Site in December 2001, in accordance with the original RAP, dated September 2001, after public notice was completed in accordance with the RSRs. Remediation is now considered complete in PRAs 1 and 2, pending the filing of a final site-wide ELUR and approval of the limited engineered control for PRA 2. Portions of PRAs 5, 8, 13, 14 and 88 were remediated in 2002; however, results of the initial post-remediation data suggested that the originally proposed actions in several of the PRAs required reevaluation and modification.

When PSEG took ownership of the Site, the CTDEP was informed of PSEG's intent to thoroughly review existing data and compile and supplement all collected information and modify the originally planned remedial actions, as warranted. This revised RAP incorporates supplemental data generated from ongoing investigations with previous findings and takes into account PSEG's intended long-term utilization of the Site as an electric generation facility. This RAP is formatted to provide a brief update with respect to originally planned and/or completed remedial actions and presents planned prospective activities for those PRAs not yet addressed, specifically PRAs 3, 6 and 15.

The remedial measures presented herein have been developed in consultation with the CTDEP and are consistent with the requirements of the CTDEP's RSRs.

## 2. BACKGROUND

### 2.1 SITE DESCRIPTION

The BHS Site consists of approximately 83(±) acres of land, just over 25% of which extends beyond the southern Site shoreline and into Bridgeport Harbor. The area above mean sea level totals approximately 61(±) acres. Of this, approximately 54(±) acres comprises the current BHS electric generating station, including support facilities. The remaining seven (7) ± acres is comprised of four (4) abutting, or nearby parcels, which historically supported predominantly industrial/commercial operations and were acquired by UI in the 1990s. The current Site boundaries and layout are shown on Figure 2.

The generating station was constructed in 1957 with additional units added in 1961 and in 1968 and encompasses just over 100,000 square feet (sf). The three (3) main generating units are fueled by coal and/or No. 6 fuel oil with an approximate generating capacity of 650 megawatts. A peaking unit, constructed in 1967 and fueled by aviation fuel, is located near the northern end of the Site. The primary power plant support facilities that comprise the Site include the bulk oil and coal storage areas and a wastewater treatment plant. At present, buildings, structures and/or pavement cover approximately 30% of the Site.

Two (2) of the outlying parcels which collectively abut the generating station portion of the Site are referred to as the former Calia and Conrail properties which make up PRAs 1, 2, 5 and 88. A third outlying property, the former Cavalleri property, was not included in the supplemental Site investigation because initial results did not exceed RSR criteria and because the parcel now is utilized as an active electrical substation.

The 1992 USGS *Surficial Materials Map of Connecticut* depicts the on-site geology as artificial fill material. This material is described as a combination of both earthen and manmade materials that have been artificially emplaced. Boring logs indicate that the fill typically consists of fine to medium sand with varying amounts of silt, cinders, coal-ash and chips, brick fragments, river dredge materials, and miscellaneous construction debris. These deposits vary in thickness across the Site but are typically less than 15 feet thick. Historic records and boring log data suggest that,

at a minimum, the eastern two-thirds of the Site was reclaimed from the Pequonnock River by fill deposition and some fill is present on virtually the entire Site.

The glacial deposits immediately underlying the fill are primarily medium to dense sand and silt. This layer ranges in thickness from five (5) to 50 feet with thicker deposits in the northwestern portion of the Site. Published data indicates that this material is underlain by a glacial till and that a zone of weathered bedrock is expected to be present. Boring logs published by the State of Connecticut indicate that, overall, unconsolidated deposits in the vicinity of the Site thicken from west to east and range in thickness from 60 to 100 feet.

CTDEP classifies groundwater at and in the general vicinity of the Site as GB. The Site and surrounding area are served by public water supplies, and there are no public supply wells located within one mile of the Site. Regionally, groundwater flows to the south toward Bridgeport Harbor. Local variations are common due to the extensive presence of fill material on-site, and there is a significant component of flow to the east toward the Pequonnock River. Depth to groundwater on-site ranges from approximately 3.5 to 8.5 feet (ft) below ground surface (bgs). Deep groundwater flow in the vicinity of the Site is expected to be controlled by an upward gradient since the Site is located in a groundwater discharge area.

Bridgeport Harbor and the Pequonnock River are classified by the CTDEP as Class SC/SB coastal and marine surface waters. Both abutting water bodies exhibit mean tidal variations of approximately 6.4 feet.

## **2.2 PREVIOUS ACTIVITIES**

An initial preliminary evaluation and assessment of available records for the Site resulted in the identification of more than 58 possible areas of concern and potential release areas (PRAs). Based on information collected during three (3) phases of investigations in 1998, a total of 17 PRAs were retained for additional investigation. A list of these PRAs, along with a brief description of each, was provided in the Environmental Condition Assessment Form (ECAf) submitted to the CTDEP in December 2002. The PRA locations are indicated on Figure 2.



Supplemental site investigations were performed by Wisvest between 1999 and 2002. These investigations included the collection of additional soil data and the completion of eight (8) consecutive quarters of groundwater monitoring. The findings of these investigations were presented in the April 2001 Comprehensive Site Investigation Report, a copy of which was provided to the CTDEP. Based on the results of this comprehensive site-wide assessment, ten (10) of the 17 PRAs were identified as requiring remediation or other mitigation measures. Specifically, localized soil remediation or negotiation of alternative criteria was required for PRAs 1, 2, 5, 8, 13, 14, 15, and 88. In addition, soil remediation and/or implementation of an engineered control to limit access to soils exceeding the Direct Exposure Criteria (DEC) were required in the area west of PRA 3 and north of, and including, PRA 6 and in PRA 2. Planned remedial actions were presented in the September 2001 RAP.

Remedial actions were initiated in selected PRAs, including 1, 5, 8, 13, 14 and 88, in November 2001 and continued until the Site was transferred to PSEG in December 2002. In conjunction with soil removal activities, post-excavation and additional investigatory soil samples were collected and analyzed. These additional data have been compiled and have been evaluated by PSEG. These data, together with previous data collected at the Site and information relative to past Site usage, provide the basis for this revised RAP. Figure 3 is a compilation map that represents the remedial actions currently planned for the Site.

### **3. REMEDIAL OBJECTIVES**

Remedial objectives described in this RAP are based upon the following:

- BHS meets the definition of an “Establishment” as described in the Connecticut Transfer Act (Section 22a-134 (3)).
- The primary constituents of concern at BHS include semi-volatile compounds (SVOCs), total petroleum hydrocarbons (TPH) and metals.
- The RSRs establish the overall standards for assessing analytical data, designing remedial actions, and correspondingly, minimizing risks to human health and the environment.
- BHS is located within an area designated as a “GB” groundwater classification. Therefore, the applicable groundwater criteria as stipulated in the RSRs, include the Volatilization Criteria (VC), which apply to groundwater within 15-ft of the ground surface or a building floor, and the Surface Water Protection Criteria (SWPC). The SWPC, as provided in the RSRs, apply to the groundwater at the point where it discharges to a surface-water body. Alternative SWPC have been developed for the BHS Site utilizing a site-specific dilution factor calculated in accordance with the procedure similar to that presented in the RSRs, but modified to account for tidal flux.
- Given the current and projected future use of the Site for electric generation purposes, the applicable soil clean-up standards include the GB Pollutant Mobility Criteria (GBPMC) and the Industrial/Commercial Direct Exposure Criteria (IDEC). The GBPMC apply to soil above the seasonal high groundwater table (SHWT) and the IDEC apply to soil within 15-ft of the ground surface, subject to the exemptions and limitations provided in the RSRs.
- In addition to any planned remedial actions, compliance with the RSRs will also require recording one or more Environmental Land Use Restrictions (ELUR) for the Site.

- There are areas at the Site that have been found to deviate from the RSRs but are also critical active areas required for the generation of electricity, such as transformer enclosures, a fuel oil tank farm, and a bulk coal storage area. Impacts in these areas are generally limited to exceedances of the IDEC and are accessed on an infrequent basis. They do not present any immediate health risk or environmental concern. Additionally, employees/contractors at the BHS Site have been made aware of contaminant concerns and intrusive activities have been limited through management directives. Accordingly, PSEG will petition CT DEP for deferral of remedial actions in these areas until the areas are no longer utilized.

## **4. CURRENT STATUS AND REVISED REMEDIAL ACTIONS**

### **4.1 PRA 1 – FORMER TRUCK REPAIR FACILITY**

This area includes a storage building, formerly a truck repair garage, and a partially paved lot that is adjacent to the Bridgeport Ferry Dock access road. Prior to the truck garage's presence, the property was part of a rail yard and maintenance facility for over 50 years. Underground storage tanks (USTs) associated with the truck garage were previously located on-site and have since been removed. Boring logs indicate that the upper 2-7 ft bgs is comprised of sand and asphalt/concrete debris fill including beneath the existing building/former truck garage. Previous reports indicated that visually impacted soils were excavated during underground storage tank (UST) removals. Associated sampling indicated compliance with the RSRs for volatile organic compounds (VOCs), TPH, and synthetic precipitation leaching procedure (SPLP) metals. Contaminants encountered in the subsurface soil that exceeded the applicable RSR criteria include selected SVOCs and TPH. It is not known whether these contaminants are related to the former truck garage or railroad operations.

#### **4.1.1 PRA 1 - Initial Remedial Approach**

Of the five (5) samples that were collected within or including a portion of the upper four (4) feet of soil, results indicate one exceedance (TB-12) of the IDEC for selected SVOCs and one exceedance (TB-09) of the RDEC for TPH. Both samples were collected within the upper 2 ft bgs in the same general vicinity. Remedial actions were planned to remove shallow (less than 2 ft in depth) impacted soil in the vicinity of sample location TB-12. In addition, one sample, GP-04 exceeded two (2) times the GBPMC for TPH; however, this sample was collected from below the SHWT of approximately eight (8) feet and, as such, no additional remedial action is required under the RSRs.

As originally proposed, an area of approximately 400 sf around TB-12 was to be excavated to a depth of approximately two (2) feet and transported off-site for disposal. This area was basically bounded by “clean” samples at TB-014, GP-001, GP-09 and MW-04. A total of approximately 30 cy of soil was expected to be removed with seven (7) to ten (10) post-excavation samples to

be collected from the excavation and analyzed for the presence of SVOCs and extractable total petroleum hydrocarbons (ETPH).

#### **4.1.2 PRA 1 – Current Status**

In December 2001, a total of approximately 32 cy of impacted soils were removed to a depth of 3 ft bgs in the vicinity of sample locations GP-09, TB-09, and TB-12. Excavations were conducted in each of the three (3) areas as approximated below:

- GP-09: 10 ft X 10 ft X 3 ft (300 ft<sup>3</sup>)
- TB-09: 10 ft X 18 ft X 2 ft (360 ft<sup>3</sup>)
- TB-12: 10 ft X 10 ft X 2 ft (200 ft<sup>3</sup>)

A total of 12 post-excavation samples were analyzed for polynuclear aromatic hydrocarbons (PAHs) and ETPH. Analytical results confirmed compliance with the RSRs. The three (3) excavation areas were backfilled with clean fill. No further remedial action is required in PRA 1; however, an environmental land use restriction (ELUR) is required to restrict future use to industrial activities and prevent disturbance of soil below 4 ft bgs under the existing building.

*A complete description of the remedial actions completed and the resulting outcome will be presented in the final Site Completion Report for the BHS Site.*

#### **4.2 PRA 2 – GASOLINE STATION FORMER USTS**

PRA 2 is comprised, in part, of the entrance portion of the paved access road to the Bridgeport Ferry Dock (Figure 2). The remainder is comprised of the associated surrounding landscaped area. PRA 2 is the site of a former gasoline service station and, prior to that, a rail yard. The former pump island, building floor drain and USTs were reportedly removed.

A total of 16 soil samples were collected and laboratory analyzed from 13 locations at various depths within the PRA prior to construction of the access road. Additional samples were also collected within the unpaved median strip at the Ferry Access Road. Lead is the only constituent of concern detected in excess of the RSR criteria at PRA 2. Eight (8) samples collected within

the upper four (4) feet of soil were either analyzed for priority metals or lead only. TB-05 and GP-60 exceeded the IDEC for lead in the 2-4 ft bgs interval and at SB72 in the 0-4 ft bgs sample. GP-61 exceeded 2x IDEC for lead at 2-4 ft bgs and the IDEC for lead at 0-2 ft bgs. Lead concentrations also exceeded to GBPMC at 2-4 ft bgs in GP-61 and 2x GBPMC at 2-4 ft bgs in GP-60. TB-05, GP-60 and GP-61 were collected in the unpaved median strip in the Ferry Access Road. Sample SB-72 was collected from the northern side of the road. The source of the lead contamination is unknown, but the distribution suggests that it is not associated with operation of the former gas station.

#### **4.2.1 PRA 2 - Initial Remedial Approach**

Remedial actions related to lead in soils within PRA 2 was expected be complicated by the presence of the newly constructed and heavily traveled ferry access road within an easement obtained by the Bridgeport Port Authority. Original remediation plans called for the following:

- Paving the median strip as a limited engineered control to render the underlying soils (sample locations TB-05, GP-60, and GP-61) “inaccessible;”
- Addressing the GBPMC exceedances within PRA 2 by providing a demonstration of compliance utilizing the site-specific dilution factor calculation provided in the RSRs;
- Excavation and replacement of soils in the landscaped area north of the access road in the vicinity of location SB-72, to a depth of 4 ft bgs (the initial sample from SB-72 was collected from the 0-4 ft bgs depth interval);
- Collection and analyses of additional soil samples to delineate the planned limits of the above excavation; and,
- Instituting an ELUR to ensure maintenance of the pavement, prevention of human exposure and, thus, achievement of compliance with the direct exposure requirements of the RSRs.

#### **4.2.2 PRA 2 - Revised Remedial Approach**

Additional sampling and analysis of soils for lead was performed at and in the vicinity of PRA2 in 2003. The results indicated that elevated total lead concentrations are present Site-wide, but exceed the GBPMC upon extraction in very few cases. Concentrations in the vicinity of PRA 2 were found to be highly variable and likely related to the presence of historic fill and/or previous industrial operations. Statistical evaluation of the available data, including the anomalies, indicated that the 95% upper-confidence level (UCL) for lead both Site-wide and, specifically, in the vicinity of PRA 2 were below the GBPMC. A request for a waiver of the requirement to remediate soils exceeding the GBPMC by a factor of 2 was submitted to CTDEP in November 2003. CTDEP approved this waiver in May 2004 (Appendix A). As a result, no further action is recommended relative to compliance with the GBPMC in PRA 2.

Additional sampling conducted by PSEG indicated that soils within the upper foot of the ground surface do not exceed the residential direct exposure criteria (RDEC). As a result, a request will be submitted to CTDEP proposing that the pavement and landscaped area in PRA 2 be approved as a limited engineered control for preventing exposure to lead impacted soil. The request for approval of a limited engineered control shall comply with the requirements of Section 22a-133k-2(f)(2) of the regulations.

*A complete description of the final actions taken to address this PRA will be presented in the final Site Completion Report for the BHS Site.*

#### **4.3 PRA 3 – ASH BASIN AREA**

The area designated as PRA 3 is currently a paved parking lot (Figure 2). It was originally identified as the location of a former ash basin that was reportedly excavated in the 1980s. As a result of the site investigation, the impacted area boundaries were expanded to include the area immediately to the west between the Building Maintenance Building and the current coal pile berm, where ash handling had taken place. This entire area including a portion of PRA 6 is designated as remedial action area RAA-3W on Figure 2.

Boring logs for both MW-17 and TB-44 indicate the presence of fill material to a depth of at least 15 ft bgs. Maps illustrating the history of the Pequonnock River shoreline configuration support this finding. This portion of the Site was reclaimed from the river by backfilling in the late 1800s and early 1900s. It served as the site of a railroad roundhouse prior to the construction of the existing power plant. Ash, coal, brick fragments and other material were present in most of the soil samples collected in this area.

A total of 32 samples were collected from the upper four (4) feet of soil in RAA-3W. Of these, 20 exceeded the IDEC for arsenic with 11 being greater than 2x IDEC. In addition, two (2) samples exceeded the IDEC for nickel, one for lead and 11 exceeded the RDEC for vanadium. Four (4) of five (5) samples collected from 0-2 ft bgs interval beneath the paved parking lot (PRA 3) did not exceed the DEC for metals; GP-48 was the exception. Below 4 ft bgs, 11 samples exceeded the IDEC for arsenic, four (4) of these by more than two (2) times. Three (3) additional samples from previous investigations in the vicinity also exceeded the IDEC for arsenic. This observation suggests that the presence of arsenic in this area may be related to the historic fill material rather than operations associated with the power plant.

Of the 41 samples collected above the SHWT depth of approximately 6 feet, 35 yielded total metal concentrations greater than 20xGBPMC on a mass basis. Twenty-six (26) of these were analyzed by SPLP extraction. Results indicated that ten (10) of these samples from nine (9) locations exceeded the GBPMC for vanadium, six (6) of these by more than two (2) times. One location (SB-67) exceeded 2xGBPMC for lead.

In general, results indicate that exceedances of the IDEC (in many locations, 2xIDEC) for arsenic exist throughout most of the unpaved and part of the paved area west of the original PRA 3 (former ash basin) boundary, extending north to the boundary of the former container storage area (CSA), south to the coal pile berm and west to the oil supply line. In addition, within a subsection of the arsenic impacted area, vanadium, and at one location, lead concentrations exceeded the GBPMC (in some locations, 2xGBPMC) to the depth of the SHWT (approximately 6 feet). Although this area is largely comprised of fill, both the arsenic and vanadium impacts have been bounded, according to sampling data, and therefore do not appear to meet the RSR definition of “widespread polluted fill.”



#### **4.3.1 PRA 3 – Initial Remedial Approach**

In the area of the GBPMC exceedances, a simple pavement cap, preventing contact with the soils would not provide an acceptable engineered control within the context of CTDEP's RSRs. Additionally, the number of facility structures and volume of traffic in this area, some of it by heavy equipment, may present an impediment to the installation and maintenance of an engineered control (RCRA-type cap) in full compliance with the RSRs to address the PMC exceedances. As a result, the initially planned remedial approach included the following:

- A combination of soil excavation and backfilling to address the GBPMC exceedances and installation of a pavement cap to address DEC exceedances;
- Removal of approximately 1,050 cy of soil to a depth of up to six (6) feet from an area encompassing approximately 4,800 sq ft;
- Backfilling of the above area with clean fill, regrading, and installation of a pavement cap to cover an area of approximately 19,000 sq ft to address DEC exceedances;
- Institution of an ELUR structured so as to prevent disturbance and exposure to soil below the pavement; and
- Posting of a bond to ensure maintenance of the pavement cap.

The approximate area affected is shown as RAA-3W on Figure 2.

#### **4.3.2 PRA 3 – Revised Remedial Approach**

Currently planned remedial actions for RAA-3W do not differ substantially from the original. Soil removal is still the selected option for addressing exceedances of the GBPMC relative to vanadium. However, since the filing of the original RAP, additional sampling has been performed at and in the vicinity of the former CSA, which is in the process of being closed under the CTDEP RCRA program. These data indicate that the area of RAA-3W that originally required implementation of a limited engineered control to address elevated arsenic

concentrations will need to be expanded to the north to incorporate the former CSA and boring location GP-66.

One change lies in the nature of the limited engineered control that will be employed to address elevated arsenic levels. Since the original RAP was filed, the CTDEP has indicated a willingness to permit the use of soil or other unconsolidated materials in place of pavement as an acceptable surface control. Although pavement may still be utilized as a cover material in selected areas of RAA 3W based on operational needs, soil or other material will be used in place of pavement over a large portion of the area. The request for approval of a limited engineered control shall comply with the requirements of Section 22a-133k-2(f)(2) of the regulations.

#### **4.4 PRA 5 & 88 – SOLID WASTE DISPOSAL AREAS**

PRA 5 is currently an unpaved vacant lot periodically used for temporary contractor parking. It is comprised of portions of two (2) parcels formerly known as the Conrail and Cavalleri properties. PRA 88 is a partially paved vacant lot located adjacent to PRA 5 and separated from PRA 1 by the Bridgeport Ferry access road.

In the 1980s, CTDEP cited a demolition company for illegally disposing of solid waste on the former Conrail property. Removal of the waste was performed under the direction of the CTDEP and completed to the satisfaction of the CTDEP in 1992, prior to the property being acquired by UI.

The Cavalleri property was placed under order in 1978 for the storage of drums of hazardous and industrial wastes. The drums were reportedly removed and properly disposed of in 1978, prior to its acquisition by UI. The Cavalleri property (southern portion of PRA 5) received LEP remediation verification in 1997. This PRA was also the site of a furniture factory in the early 1900s and a rail yard before the early 1900s. PRA 88 was also part of the former Conrail property and the location of former railroad roundhouse and rail yard. This portion of the former Conrail property also appears to have been subject to the above-described solid waste disposal order issued in the late 1980s. The constituents of concern in both areas included VOCs, SVOCs, metals and TPH.

A total of 16 samples were collected from the upper four (4) feet of soil in PRAs 5 and 88 during the site investigation. Three (3) sampling locations (GP-13, HA-03, TB-17) exceeded 2xIDEC and one (MW-006) exceeded the IDEC for SVOCs. Two (2) samples, TB-23 and TB-017 exceeded 2xIDEC for TPH and arsenic, respectively. Two (2) locations exceeded the IDEC for either arsenic or lead. One sample (GP-07) collected from below 4 ft bgs exceeded 2xIDEC for SVOCs.

Relative to the GBPMC, all samples above the SHWT (approximately 4-5 feet deep) complied with the RSRs either by direct comparison of laboratory results or indirectly through the use of comparative data from similar locations. The only exception was TB-23, which exceeded 2xGBPMC for TPH.

#### **4.4.1 PRAs 5 & 88 - Initial Remedial Actions**

Remedial actions initially planned for PRAs 5 & 88 consisted of the following:

- Removal of soil where contaminant concentrations exceeded the IDEC at four (4) locations, as follows: approximately 12 cy of soil (approximately 10ft ×10ft ×3ft) from locations TB-23 and HA-03, approximately 10 cy of contaminated soil from the area around GP-13, and approximately 12 cy of contaminated soil (approximately 10ft×10ft×3ft) from the area around TB-17 in PRA 88.
- Collection of a total of 10-12 post-excavation samples from the above excavation areas and analyses for SVOCs, ETPH and/or metals.
- Addition of the post-excavation data to the existing site investigation database and evaluation in the context of the RSRs.
- Assuming acceptable results, backfill the excavations with clean soil and restore the ground surface.
- File and record an ELUR restricting future parcel use to industrial/commercial purposes.

#### **4.4.2 PRAs 5 & 88 - Current Status**

The initial remediation was performed between December 2001 and January 2002. A total of approximately 70 cy of soil was removed from the above locations and transported to an off-site facility. Post-excavation sampling data, however, yielded highly variable results and prompted an expanded test pit investigation, particularly in PRA 88 in 2002 and 2003. The additional investigation consisted of more than 20 test pits and ten (10) additional direct-push borings. The resulting data indicated the widespread and highly variable nature of the soil impact in this area with no discernable pattern to the contaminant distribution. The investigations also identified the presence of former structures and demolition debris, seemingly related to the historic rail operations previously located on the parcels.

Soil impacts were primarily limited to the presence of ETPH and/or one or a limited number of PAHs at concentrations in excess of the IDEC.

#### **4.4.3 PRAs 5 & 88 - Revised Remedial Approach**

The impacted area in PRAs 5 & 88 covers approximately 1.5 acres and extends to depths of up to 6 ft bgs. The currently planned remedial approach is to remove a limited amount (up to 1200 cy) of soil from mounded portions of the parcels, re-grade the surface to an elevation of approximately 10 ft amsl and institute a limited engineered control consisting of a combination of pavement and/or clean fill. A request to implement a limited engineered control will be submitted to the CTDEP for approval, in accordance with the requirements of Section 22a-133k-2(f)(2) of the regulations.

#### **4.5 PRA 6 – FORMER SLUDGE DRYING IMPOUNDMENT**

PRA 6 is not currently a discernable unit on the ground surface. The boundaries were estimated based on historical aerial photographs. Initially, PRA 6 was believed to be an impoundment. However, subsequent discussions with former UI personnel indicated that it was not actually an impoundment, but an area on the ground surface where sludge from a vacuum press was placed to dry prior to being transported off-site. The boundary of PRA 6, as currently specified, places the bulk of the area within the existing coal storage pile dike.

Five (5) samples were collected within the upper four (4) feet of soil. Several metals were detected including arsenic, which exceeded 2x IDEC at three (3) locations, and the IDEC at one location. Eight (8) additional samples were collected from below 4 ft bgs. Four (4) locations exceeded 2x IDEC for arsenic and two (2) locations (MW-019 and TB-049) exceeded the IDEC for arsenic at a depth of 13 ft bgs.

With regard to the PMC, 12 samples were collected above the SHWT. At two (2) locations (TB-048 and GP-057), SPLP results for metals indicate nickel concentrations in excess of the GBPMC.

#### **4.5.1 PRA 6 – Initial Remedial Approach**

The factors involved in developing the initial remedial approach for PRA 6 included the following: (1) the portion of the PRA located within the coal berm is not accessed on a regular basis by plant personnel other than the heavy equipment operators who move the coal; (2) it is often buried beneath several feet of coal; and, (3) the contaminants detected in PRA 6 may be associated with historic coal storage rather than previous sludge-drying operations. Therefore, this area will be addressed when the storage area is eventually closed.

Based on these factors, the initial remedial approach for PRA 6 included the following:

- Including the 25% of PRA 6 located outside the coal storage dike within and addressing it in conjunction with the remediation planned for RAA-3W, as shown on Figure 2; and
- Petitioning the CTDEP for a deferral of remedial actions in the portion of PRA 6 located within the coal storage berm until the storage area is no longer utilized.

#### **4.5.2 PRA 6 – Revised Remedial Approach**

The only change with regard to the remedial approach for PRA 6 relates to the presence of nickel at concentrations in excess of the GBPMC. Additional sampling in the area suggests that statistically, the elevated nickel values may represent an insignificant anomaly and, accordingly, a request for a waiver of the applicable standard will be submitted to the CTDEP.

## **4.6 PRA 8 – TRANSFORMER ENCLOSURES**

This PRA is comprised of three (3) separate transformer enclosures and a concrete pad where a spare transformer was temporarily stored. The two (2) smaller transformer enclosures, located west of the Jet Turbine (JT) and outside the Utility Building (UB), are no longer in operation. The large transformer enclosure, located along the east wall of the plant (EW) is still in active use. The concrete pad (CP) is located outside the power plant southern wall and currently underlies an aboveground tank used to collect used oil. The parameter identified in these areas in excess of the applicable criteria was TPH. Nine (9) of 12 samples collected from the upper foot of soil exceeded 2xIDEC, and two (2) of the remaining three (3) exceeded the IDEC for TPH. Most of these samples also exceeded either 2xGBPMC or GBPMC. Neither of the subsequent samples collected from the 2 to 4 ft bgs depth interval in any of the locations exceeded the DEC nor the PMC. This data confirms that the TPH impacts are limited to the surficial soils and do not extend to depth.

### **4.6.1 PRA 8 – Original Remedial Approach**

The remedial approach originally proposed for the PRA 8 areas consisted of the following:

- Removal of shallow contaminated soil and post-remediation sampling at the JT and UB transformer enclosures and at the CP location (up to 10 cy of soil was expected to be removed at each location);
- Collection of three (3) to five (5) post-excavation samples from the JT and UB areas for analysis using the ETPH method; and
- Deferral of remediation in the EW transformer enclosure, which would ultimately be performed in the same manner as that proposed for the JT and UB enclosures, until the transformers are deactivated. Since the ground surface is covered with gravel and the contamination is not mobile, postponing remediation until the transformers are shut down will not pose any unacceptable risk.

#### **4.6.2 PRA 8 - Current Conditions**

Following the removal of the transformer from the UB location, shallow soil was excavated from the accessible areas around the pad. Four (4) post-excavation samples were collected in August 2001. Results indicated that one location still exceeded the IDEC and GBPMC for ETPH. Additional soil was removed from this area and two (2) additional samples collected in December 2001 confirmed that soil met the criteria and no additional remediation at this location is warranted.

During a plant maintenance outage in 2002, shallow soil was removed from around the transformer pads in the EW enclosure. Several of the post-excavation samples collected indicated that additional soil removal is still required to meet the RSRs.

#### **4.6.3 PRA 8 – Revised Remedial Approach**

The overall remedial approach for PRA 8 has not changed from the original. Work in the UB enclosure area is complete. Additional soil removal has also been performed in the EW enclosure and re-sampling to finalize remedial plans will be performed when operating conditions permit. The originally proposed sampling at the JT location has not yet been completed.

#### **4.7 PRA 13 – TANK FARM**

The current tank farm consists of four (4) 7-million gallon No. 6 fuel oil above-ground storage tanks (ASTs) that were installed circa 1968. Sanborn Maps indicate that, prior to 1968, two (2) large bulk oil tanks were located in the same area. Historically, the area was occupied by a manufacturing facility (Locomobile Company of America) from the early 1900s until the 1960s. Approximately 80% of the former manufacturing facility area, originally identified as PRA 16, is now covered by the tank farm. The two (2) PRAs are essentially inseparable and, as such, PRA 16 is not being considered independently. Constituents of concern that have been found to be present in excess of the applicable standards are SVOCs, metals and TPH.

A total of 32 soil samples were collected from the upper four (4) feet of soil within and outside the tank dike. Within the dike, two (2) samples (HA-10 and SS-100) exceeded 2xIDEC, and one sample (HA-05) IDEC for TPH. Outside the dike, two (2) samples (GP-16 and GP-22) exceeded 2xIDEC for TPH. Six (6) other samples exceeded the RDEC for TPH or SVOCs.

Seventeen (17) samples were collected from a depth greater than 4 ft bgs. One sample (MW-023) exceeded 2xIDEC for lead at a depth of 9 ft bgs and one (GP-22), exceeded 2xIDEC for TPH. Two (2) additional samples (GP-16 and TB-056) exceeded the IDEC for TPH at depths of 5 and 9 ft bgs, respectively. Three (3) additional samples exceeded the RDEC for TPH.

Relative to the PMC, a total of 37 samples were collected above the SHWT. Four (4) samples (GP-16, GP-22, HA-10 and SS-100) exceeded 2xGBPMC for TPH. HA-09 and HA-011 exceeded the GBPMC for SVOCs. The SPLP extraction results for HA-09 are below 10xGWPC. HA-11 was not extracted; however, it is reasonable to conclude that leachate results would fall below the applicable criteria based on results from nearby locations.

#### **4.7.1 PRA 13 – Original Remedial Approach**

The originally planned remedial approach to address all locations exceeding the IDEC or GBPMC by more than two (2) times is summarized below. Subsequent statistical analysis was expected to be used to demonstrate compliance with the RSRs at the remaining locations.

- Excavate approximately 20 cy of impacted soil (approximately 10ft×10ft×5ft) from the area around GP-16, east of the tank dike. The area is bounded by clean samples at GP-17, 19 and 21;
- Remove a total of approximately 15 cy of contaminated soil (each approximately 10ft×10ft×2ft) from the areas around sample locations HA-5 and SS-100, located within the dike;
- Collect up to three (3) post-excavation samples for ETPH analysis from each location; and,



- Petition CTDEP for deferral of the removal of an estimated 400 cy (approximately 50ft×50ft×4ft) from the area around sample location HA-10 located along the western-most portion of the tank farm inside the dike.

Remediation in the area of HA-10 is not possible at this time since heavy equipment access would be hindered and the extent of excavation would be limited by the proximity of the tanks, fuel piping and fire suppression system piping. The basis for requesting a deferral included the reduced frequency at which plant personnel regularly access this portion of the tank farm as compared to other areas of the Site. The actual exposure risk posed by conditions within a facility designed to contain spills may not warrant immediate attention.

#### **4.7.2 PRA 13 – Current Conditions**

Remediation of the impacted soil in PRA 13 began in December 2001. The initial excavation at the GP-16 location encountered a thick mixture of soil and what appeared to be No. 6 oil filling the voids between the large boulders and blocky rip-rap fill that dominate the subsurface in this portion of the Site. A total of 25 test pits were subsequently completed in the area to depths of approximately five (5) feet to determine the extent of the impacts. The boundaries of the impacted area were confirmed by laboratory analyses. In March 2002 excavation of the delineated area was initiated. A total of approximately 1950 cy of contaminated soil was excavated and transported off-site for thermal treatment. Contaminated material remained in place in portions of the western wall of the final excavation. This area was not disturbed so as not to jeopardize the integrity of the existing tank farm berm. A total of 11 post-excavation samples were collected to confirm that the remediation was complete.

*A complete description of the remedial actions completed and the resulting outcome will be presented in the final Site Completion Report for the BHS Site.*

#### **4.7.3 PRA 13 – Revised Remedial Approach**

PSEG currently has no plans to revise the remedial approach as described above for the remainder of PRA 13. Soil excavation will still be performed at HA-5 and SS-100, within the tank dike and deferred, with CTDEP approval, in the vicinity of HA-10.

## **4.8 PRA 14 – FORMER WASTE IMPOUNDMENT**

PRA 14 is currently vacant, unpaved land. It is the former site of an impoundment that first appeared on a 1975 aerial photograph, but was removed and/or backfilled by 1985. No historical information was available regarding the use of the impoundment or the nature of the backfill.

During the Site investigation, five (5) soil samples were collected from the upper four (4) feet of soil and analyzed for various constituents of concern. Sample GP-31 exceeded 2xIDEC for arsenic and the RDEC for nickel. GP-33 exceeded the IDEC for arsenic. Three (3) samples were also collected from below 4 ft. bgs. No exceedances of the DEC were identified.

Relative to the PMC, five (5) samples were collected from above the SHWT and analyzed for constituents of concern. All contained metals concentrations in excess of 20 x GBPMC on a mass basis. Two (2) soil samples with representative constituents of concern at the highest concentrations were subsequently analyzed by SPLP extraction and were found not to have concentrations in excess of the GBPMC.

### **4.8.1 PRA 14 - Initial Remedial Approach**

The initial remedial approach for PRA 14 called for the removal of soil with concentrations of contaminants of concern exceeding the IDEC by a factor of 2 or more. The plan consisted of:

- Excavation of approximately 10-20 cy of soil from the vicinity GP-31 and GP-33, assuming a relatively limited aerial extent of impact;
- Prior to excavation, collection and analyses of in-situ soil samples at three (3) to five (5) locations to thoroughly delineate the extent of exceedances of RSR criteria to bound the limits of prospective excavation activities; and,
- Following excavation, collection of post excavation samples to confirm compliance with the RSRs.

#### **4.8.2 PRA 14 - Current Status**

Remediation in PRA 14 was initiated with the excavation of approximately 15 cy of contaminated soil at the location of GP-31. Three (3) of the post excavation sidewall samples exceeded the IDEC for arsenic. Additional soil samples were collected and analyzed from a series of test pits extending radially outward from the initial excavation. Several of these locations provided samples with arsenic concentrations in excess of the IDEC; therefore, a supplemental soil boring program was conducted. The results of this investigation indicated that total arsenic concentrations exceed the IDEC, often by a factor greater than two (2), in the upper four (4) ft of soil at several locations throughout PRA 14. Several sampling locations encountered soils below 4 ft. bgs that also exceed the IDEC. However, none of the samples tested by SPLP extraction, including those with the highest mass concentrations of arsenic, exceed the PMC.

#### **4.8.3 PRA 14 – Revised Remedial Approach**

PRA-14 covers an area of approximately 1.1 acres and the ground surface is relatively flat. The area is neither subject to vehicular traffic nor is it subject to erosion; it is occasionally utilized for equipment staging. The widespread presence of arsenic in PRA-14 will be addressed through the use of a limited engineered control consisting of approximately six (6) inches to one foot of clean soil covered by grass/vegetation. The request for approval of a limited engineered control shall comply with the requirements of Section 22a-133k-2(f)(2) of the regulations.

#### **4.9 PRA 15 – BRIDGEPORT ENERGY DISCHARGE EASEMENT**

PRA 15 outlines an area that includes the current location of the BHS Unit 3 cooling water discharge tunnel as well as the discharge tunnel (and easement) for the Bridgeport Energy facility. This area also includes the remaining 20% of the manufacturing facility originally identified as PRA 16. Two (2) steel USTs were removed from this area during construction of the Bridgeport Energy cooling water discharge tunnel. Contaminants found in this area at concentrations in excess of the applicable standards included TPH and SVOCs. These constituents appear, in part, to be associated with the former USTs; however, the origin of the constituents identified in the shallow soils separate from the former USTs is unknown.

A total 13 soil samples were collected and laboratory analyzed from the shallow (<4 ft. bgs) interval in this area; three (3) for SVOCs and all for TPH/ETPH. Samples collected from GP-23 and GP-24 exceeded 2xIDEC and TB-54 the IDEC for TPH. Samples from GP-22 and 35 exceeded the RDEC for TPH and a sample from GP-24 exceeded 2xIDEC for SVOCs. No other exceedances of the DEC were detected.

Seven (7) soil samples collected from below 4 ft. bgs were also laboratory analyzed. Four (4) exceeded 2xIDEC for TPH; however, all four (4) were collected below the SHWT. A sample collected from GP-25 exceeded the IDEC for SVOCs at 4-6 ft. bgs.

Relative to the PMC, 14 soil samples were collected from above the SHWT and were laboratory analyzed. Only one (GP-23) exceeded 2xGBPMC for TPH. A sample from GP-24 exceeded 2xGBPMC for SVOCs.

#### **4.9.1 PRA 15 – Initial Remedial Approach**

The initially proposed remedial approach for PRA 15 included the following:

- Excavation and replacement of soil in the vicinity of GP-23 and -24 to a depth 4 ft bgs to address the exceedances of twice the IDEC for ETPH and SVOCs respectively;
- Extension of the excavation to the SHWT at GP-24 to address the PMC exceedances for SVOCs;
- Excavation and replacement of soil in the vicinity of MW-30 to a depth of 4 ft. bgs to address exceedances of the IDEC for ETPH;
- Filing and recording of an ELUR to restrict future use to industrial purposes and prevention of future soil disturbances below 4 ft bgs; and,
- Collection of post-excavation confirmatory samples and analyses for TPH and SVOCs.

Original estimates were that approximately 50 cy of contaminated soil (approximately 20ft×20ft×4ft) would require removal based upon soil samples collected from locations GP-38, -39, -40, and -41 that indicated the aerial extent of contamination.

## **4.9.2 PRA 15 - Current Status**

Two (2) significant factors have impacted PSEG's remedial objectives with respect to this PRA:

(1) Discussions with the CTDEP relative to acceptance of the utilization of unconsolidated materials as a limited engineered control in lieu of a pavement cover; and, (2) field and laboratory data collected from two (2) supplemental soil samples adjacent to GP-23 and three (3) supplemental soil samples collected from the vicinity of MW-30.

Although excavation and removal was initially selected as the remedial option for addressing impacted soils in PRA 15, the presence of numerous utilities and structures in the area including two (2) large cooling water discharge tunnels essential to the operation of both BHS and the adjacent Bridgeport Energy facility, a storm drain, aboveground fire suppression piping, foam house and the western wall of the tank farm impoundment, were expected to limit the extent and methods available for excavating soil. In addition, many of the same structures made the application of a pavement-type cap infeasible. CTDEP's revised position on the use of unconsolidated ground cover to limit exposure to contaminated soil provides a more manageable option as a limited engineered control and eliminates the need to excavate soils exceeding the DEC.

Supplemental sampling in PRA 15 was performed in late 2003 in an effort to better define the extent of the areas requiring remediation. Neither of the two (2) samples (GP-77 and -94) collected in the vicinity of GP-23 detected exceedances of the RSR ETPH criteria in the upper four (4) feet of soil. In addition, none of the three (3) supplemental samples (GP-78, -92 and -93) collected in the vicinity of monitoring well MW-30 detected exceedances of the RSR ETPH criteria in the upper four (4) feet. Based on the supplemental data, it is now concluded that the shallow soil result for MW-30 was an anomaly and not reproducible and that the shallow sample result from GP-23 does not represent an aerially extensive area of impact.

In addition to the supplemental data above, a re-assessment of the SVOC results for GP-24 indicate that extracted concentrations, based on SPLP analysis, do not exceed the GWPC and therefore do not represent an exceedance of the RSR criteria.

### **4.9.3 PRA 15 – Revised Remedial Approach**

The revised remedial approach for PRA 15 consists of the following:

- No specific remedial action is proposed in the vicinity of MW-30 since the initial sample results for the 3-5 ft bgs interval are an anomaly and could not be duplicated laterally or vertically;
- The GBPMC exceedance for ETPH above the SHWT at GP-23 was not duplicated in two (2) adjacent samples. This indicates that the impact is either not laterally extensive or the sample at GP-23 encroached on the smear zone, since the SHWT was previously measured at a depth of approximately 5.5 feet. If additional shallow samples at this location do not demonstrate impacts above the SHWT, no related remedial action will be required. If the results are confirmed, limited excavation to the SHWT will be performed;
- Since GP-23 and -24 represent the only identified exceedances of IDEC by a factor greater than two (2) in the upper four (4) feet of soil, it will be addressed by limited excavation or the existing paved roadway will be utilized as a limited engineered control at both locations; and
- Exceedances of the IDEC between depths of four (4) and fifteen (15) feet will be addressed through the use of an ELUR.

Previous reports indicated the recovery of petroleum product from the former USTs and/or tank graves when Bridgeport Energy removed the tanks during the installation of their cooling water discharge line. A total of nine (9) quarterly groundwater-monitoring events performed at the BHS Site have not identified the presence of LNAPL or SWPC exceedances for VOCs. With the continued absence of observable groundwater impacts, the CTDEP will be petitioned for alternate criteria to allow any physically inaccessible soil above the SHWT to remain in place, subject to an ELUR.

## **4.10 GROUNDWATER**

The SWPC are the principal criteria used to evaluate the impacts to groundwater at a GB site with compliance typically assessed at the sampling point located immediately upgradient of the point where groundwater discharges to a surface water body. The original RAP also included a reference to estimated alternative SWPC. These were developed in communication with CTDEP staff and a dilution factor calculated by using a version of the 7Q10 procedure outlined in the RSRs, but modified to account for tidal flux. The alternative SWPC were believed to be conservative but provided a means of evaluating the possible impacts of tentatively identified groundwater plumes earlier in the site assessment process.

To date, nine (9) quarterly groundwater sampling events have been completed at the Site. The analytical results for these events were compared to the SWPC as well as the alternate SWPC and VC. Based on the comparison, the impacts to groundwater at the Site are limited, with only one exceedance of the published SWPC (vanadium) at a potential compliance monitoring point at MW-17. The source of the vanadium in groundwater is vanadium in the soil in the vicinity of PRAs 3 and 6. Preliminary assessment of the groundwater data from MW-17 suggests that the concentrations detected will not exceed an alternative SWPC developed using a reasonable dilution factor for the Pequonnock River. A formal request for approval of an alternative SWPC will be submitted to the CTDEP.

Other identified exceedances of the SWPC are either not at compliance monitoring points or are associated with regional water quality rather than present or past site operations. In addition, elevated concentrations of arsenic detected in several wells during one or more quarterly events are not representative of actual groundwater quality. Comparative studies performed using multiple laboratories confirm that the salinity of the groundwater in certain areas requires the use of specific analytical methods to avoid false positives for arsenic.

No groundwater remediation is planned at the Site.

## **5. WASTE DISPOSAL**

Any contaminated soil excavated and/or temporarily staged at PRA 5 will be sampled, characterized and shipped off-site to a licensed facility for treatment and/or re-use. To the extent practical, separate stockpiles will be maintained for soils with differing constituents of concern. Representative samples will be collected and analyzed for waste characterization. It is anticipated that the contaminated soil will be identified as non-hazardous waste, but possibly require designation as Connecticut special waste if it will be disposed of in Connecticut. Disposal records shall be included in the Site Completion Report.



## **6. ENVIRONMENTAL LAND USE RESTRICTIONS**

At all locations where residual contamination cannot be remediated to achieve the RDEC, an ELUR will be prepared and recorded. Locations include those where soils meet the IDEC by direct comparison, meet the IDEC by statistical analysis, are rendered inaccessible or environmentally isolated in accordance with Sections 22a-133k-2(b)(3) and 22a-133k-2(c)(4)(B) of the RSRs, or where a limited engineered control is implemented. PSEG assumes at this time that it can obtain the appropriate subordination agreements or a waiver from CT DEP for the subordinations, in connection with the ELURs.

## **7. POST-REMEDATION MONITORING**

The nine (9) quarters of groundwater monitoring data collected to date identified one exceedance of the SWPC (as prescribed in the RSRs) at a potential compliance monitoring point. The presence of vanadium at MW-17 is associated with the soil immediately to the west that exceeds the GBPMC. Following remediation of the soil, four (4) consecutive quarters of compliance monitoring will be conducted at MW-17 and other downgradient wells, as required. The monitoring schedule and duration may be altered based on CTDEP's expected approval of an alternate SWPC for vanadium.

PSEG plans to conduct periodic site-wide groundwater monitoring until remediation work at the Site is complete. However, since none of the soil remediation proposed beyond the vanadium is related to GBPMC exceedances, CTDEP will be petitioned to accept the data previously generated in addition to any supplemental data as a demonstration of compliance.

## 8. REFERENCES

Roy F. Weston, Inc., 2000a, *Phase I Environmental Assessment*, Wisvest Corporation and Wisvest-Connecticut, LLC, Bridgeport Harbor Station, Bridgeport, Connecticut, November 2000.

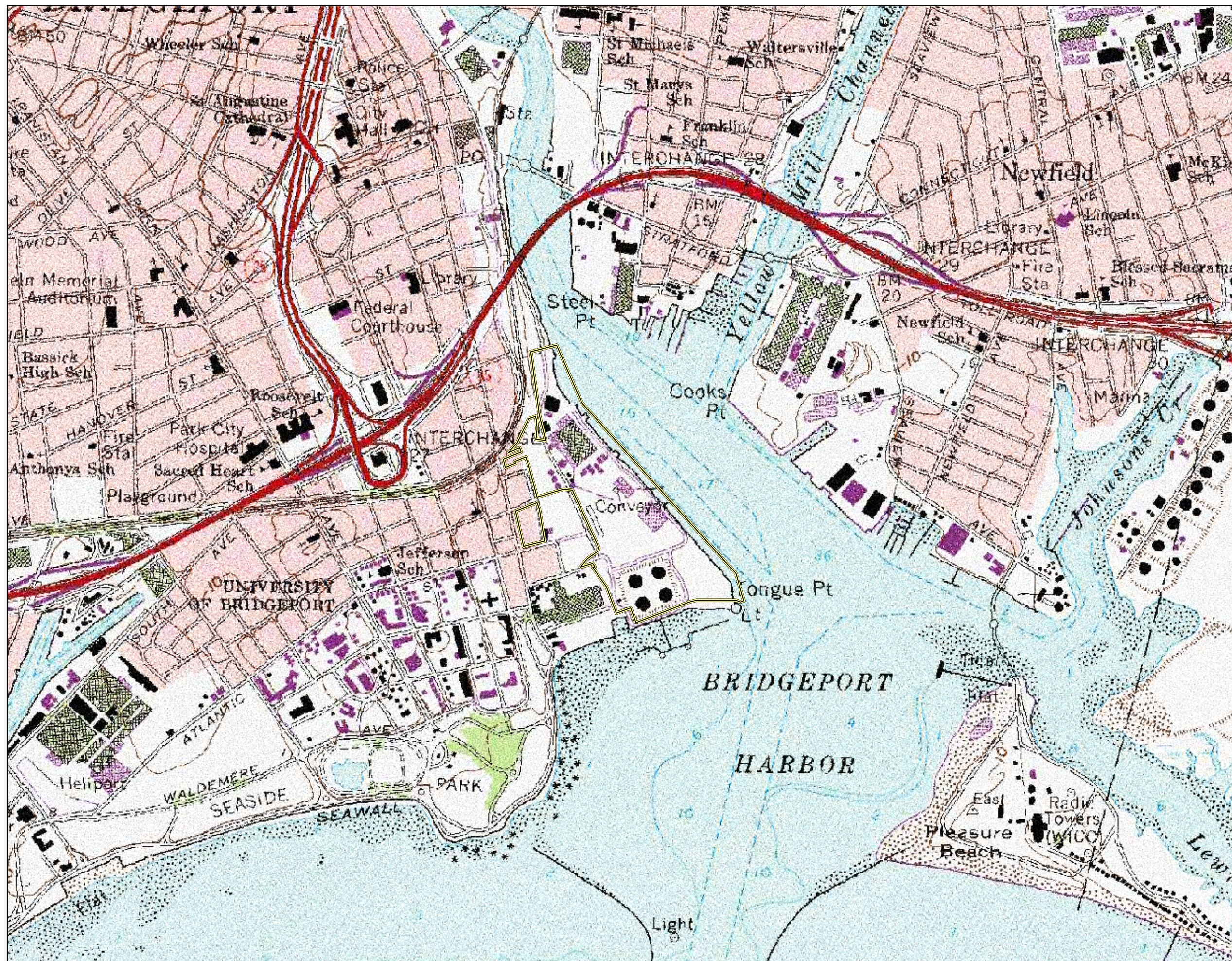
Roy F. Weston, Inc., 2000b, *Phase II/III Environmental Site Investigation*, Wisvest Corporation and Wisvest-Connecticut, LLC, Bridgeport Harbor Station, Bridgeport, Connecticut, November 2000.

Roy F. Weston, Inc., 2001a, *Comprehensive Site Investigation Report*, Wisvest Corporation and Wisvest-Connecticut, LLC, Bridgeport Harbor Station, Bridgeport, Connecticut, April 2001.

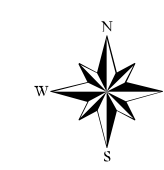
Roy F. Weston, Inc., 2001b, *Remedial Action Plan*, Wisvest Corporation and Wisvest-Connecticut, LLC, Bridgeport Harbor Station, Bridgeport, Connecticut, September 2001.

Weston Solutions, Inc., 2002, *Environmental Condition Assessment Form (ECAAF)*, PSEG Power Connecticut, LLC, Bridgeport Harbor Station, Bridgeport, Connecticut, December 2002.





**Legend**  
— Site Boundary



0 500 1,000 2,000  
Feet

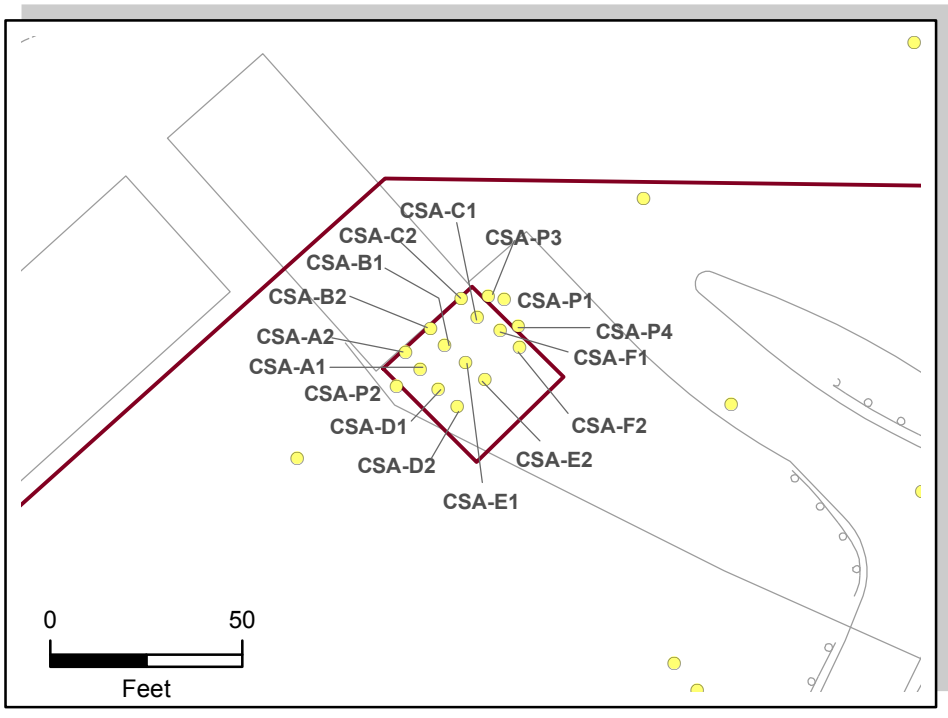
Figure 1  
Site Location  
PSEG - Bridgeport, CT



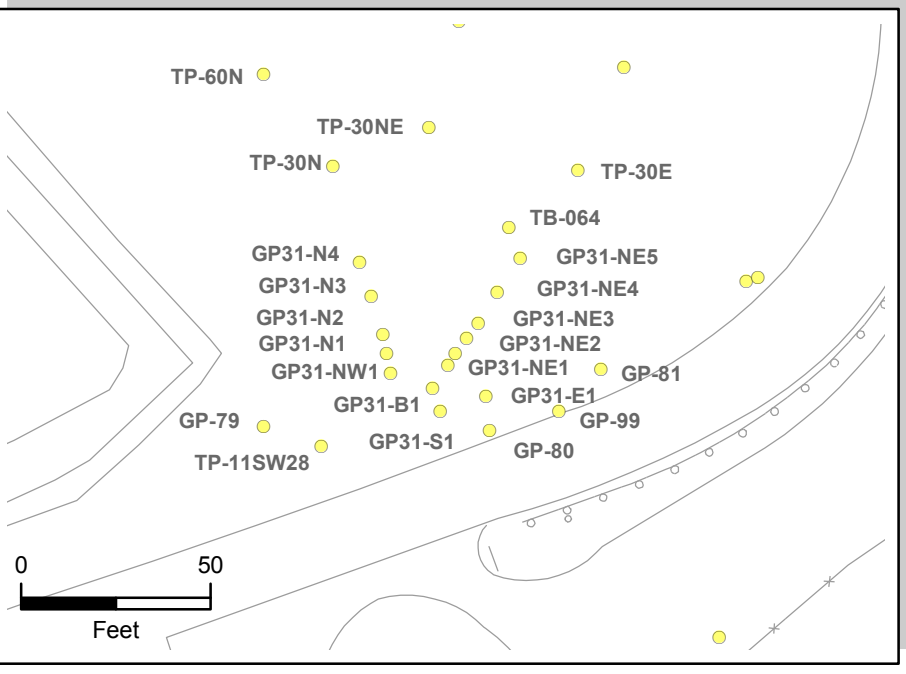




Inset #1 (CSA)



Inset #2



Legend

- Sample Location
- Site Boundary
- PRA Location

WESTON  
SOLUTIONS

N  
W  
E  
S

0 50 100 200 300  
Feet

Figure 2  
PRA and Sample Location Map  
PSEG - Bridgeport Harbor Station  
Bridgeport, CT





# Legend

Site Boundary

PRA

## Remedial Actions

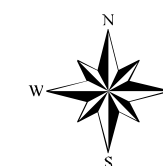
Excavation and/or  
Limited Engineered Control

Limited Engineered Control

Remedial Action Deferred  
(Operating Units)

Proposed Excavation

Area of Limited Excavation



0 150 300 600  
Feet

Figure 3  
Compilation of Planned  
Remedial Actions  
PSEG - Bridgeport Harbor Station  
Bridgeport, CT

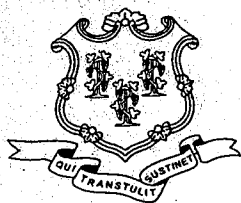


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## **APPENDIX A**

### **CT DEP Approval Letter for the Waiver Request**

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STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



APPROVAL

May 11, 2004

Robert Silvestri  
PSEG Power Connecticut, LLC  
Bridgeport Harbor Station  
1 Atlantic Street  
Bridgeport, Connecticut 06604-5513

Re: Bridgeport Harbor Station  
1 Atlantic Street, Bridgeport, Connecticut (the "site")

Dear Mr. Silvestri:

The Planning & Standards Division of the Bureau of Waste Management (the "Department") has reviewed the 26 November 2003 report titled "Request for Waiver of Selected Pollutant Mobility Criteria for Bridgeport Harbor Station," and the 31 March 2004 letter titled "Request for waiver of certain GB Pollutant Mobility Criteria for lead, PSEG, Bridgeport Harbor Station, Bridgeport, CT" (this report and letter are collectively the "Waiver Request"). Weston Solutions, Inc. prepared the Waiver Request on the behalf of PSEG Power Connecticut, LLC. The Waiver Request presents a statistical analysis of concentrations of lead in the leachate of soil. Lead is a contaminant of concern in potential release areas 1, 2, 5, and 88 at the site. Soil testing by USEPA method 1312 (SPLP analysis) revealed soil polluted with lead in excess of the Department's pollutant mobility criteria contained in the Remediation Standard Regulations (§22a-133k-1 et seq. of the Regulations of Connecticut State Agencies; the "RSRs").

Compliance with the GB pollutant mobility criteria was demonstrated in the Waiver Request using the 95% upper confidence level of the arithmetic mean of SPLP analysis results for lead in soils at potential release areas 1, 2, 5, and 88. However, lead was found to exceed the GB pollutant mobility criteria by a factor of two in one soil sample collected from potential release areas 1, 2, 5, and 88. The RSRs, §22a-133k-2(e)(2)(A), states that no sample shall exceed the pollutant mobility criteria by a factor greater than two, if compliance is to be demonstrated with the 95% upper confidence level of the arithmetic mean of the sample results. The Waiver Request requests that the Department waive this requirement. This request is supported by the conclusion in the Waiver Request that lead pollution in potential release areas 1, 2, 5, and 88 is the result of historic large scale filling in the area.

The above reference Waiver Request is hereby approved.

Nothing in this approval shall affect the Commissioner's authority to institute any proceeding, or take any action to prevent or abate pollution, to recover costs and natural resource damages, and to impose penalties for violations of law. If at any time the Commissioner



Mr. Silvestri  
Re: Bridgeport Harbor Station

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determines that the approved actions have not fully characterized the extent and degree of pollution or have not successfully abated or prevented pollution, the Commissioner may institute any proceeding, or take any action to require further investigation or further action to prevent or abate pollution. This approval relates only to modifications identified in the above referenced report.

In addition, nothing in this approval shall relieve any person of his or her obligations under applicable federal, state and local law.

If you have any questions pertaining to this matter, please contact Graham J. Stevens of my staff at (860)424-4166.

Sincerely,

*Elsie Patton*

Elsie Patton  
Acting Director  
Planning & Standards Division  
Bureau of Waste Management

EP:GJS

cc: ~~David G. Sussman~~, Weston Solutions, Inc., 148 Eastern Boulevard, Glastonbury, CT 06033-4321  
Franca DeRosa, Brown Rudnick Berlack Israels, LLP, City Place I, 185 Asylum Street, Hartford,  
CT 06103-3402  
Douglas Zimmerman, DEP

Sent Certified Mail Cert. # 7001 2510 0005 7501 4765  
Return Receipt Requested